

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A light producing and monitoring system comprising: a light producing device from which light is emitted with wavelengths that can range from approximately 700nm to approximately 3 microns; and

a semi-transparent sensor manufactured on a semi-transparent rigid substrate separate from the light-producing device, the semi-transparent substrate bonded to the light-producing device to position the light-producing device where the semi-transparent sensor is located in front of the light producing device, at least a portion of the emitted light passes through the semi-transparent sensor and at least a portion of light is absorbed by the semi-transparent sensor, wherein the semi-transparent sensor is configured to be semi-transparent at the wavelength of the emitted light, the sensor including:

a first transparent/conductive electrode layer deposited on the substrate,

an active sensor element deposited on top of the first transparent/conductive layer,

a second transparent/conductive electrode layer deposited on top of the active sensor element, and

an absorption layer deposited on top of the second transparent/conductive electrode layer to prevent visible light from reaching the active sensor element.

2. (Previously Presented) The system according to claim 1, wherein the semi-transparent substrate includes one of a quartz, silica, gallium arsenide, and glass substrate.

3-4. (Canceled)

5. (Previously Presented) The system according to claim 2 wherein the light producing device and the substrate are connected together by a flip-chip process via solder bumps to define an air gap between the light producing device and the sensor.

6. (Canceled)

7. (Currently Amended) The system according to claim [[6]] 1 wherein, the active sensor element is configured of sub-layers including,

a first sub-layer consisting of at least one of a n+ doped amorphous silicon or an amorphous silicon-germanium compound,

a second sub-layer consisting of at least one of intrinsic amorphous silicon or an amorphous silicon-germanium compound, and

a third sub-layer consisting of at least one of a p+ doped amorphous silicon or an amorphous silicon-germanium compound.

8-15. (Canceled)

16. (Currently Amended) [[A]] The light producing and monitoring system comprising: as set forth in claim 1, wherein

~~a light producing device from which light is emitted with wavelengths that can range from approximately 700nm to approximately 3 microns;~~

~~a semi-transparent substrate;~~

~~a semi transparent sensor configured on a first surface of the semi transparent substrate including:~~

~~a the first transparent/conductive electrode layer deposited on the substrate [[and]] is comprised of at least one of, Indium Tin Oxide, Tin Oxide, Zinc Oxide, or polycrystalline silicon; and~~

~~an active sensor element deposited on top of the first transparent/conductive layer and configured of sub-layers including:~~

a first sub-layer consisting of at least one of a n+ doped amorphous silicon or an amorphous silicon-germanium compound;

a second sub-layer consisting of at least one of intrinsic amorphous silicon or an amorphous silicon-germanium compound; and

a third sub-layer consisting of at least one of a p+ doped amorphous silicon or an amorphous silicon-germanium compound,

[[a]] the second transparent/conductive electrode layer deposited on top of the active sensor [[and]] is comprised of at least one of, Indium Tin Oxide, Tin Oxide, Zinc Oxide, or polycrystalline silicon[[,]].

a passivation/release layer located over at least the first transparent/conductive layer and the second transparent/conductive layer;

a first via through the passivation/release layer to the first transparent/conductive layer;

a second via through the passivation/release layer to the second transparent/conductive layer; and

first and second metal layers, deposited in the first and second vias, providing contacts to the first and second transparent/conductive layers respectively;

the semi-transparent sensor located in front of the light producing device, such that at least a portion of the emitted light passes through the semi-transparent sensor and at least a portion of light is absorbed by the semi-transparent sensor, and wherein the semi-transparent sensor is configured to be semi-transparent at the wavelength of the emitted light.

17-20. (Canceled)

21. (Currently Amended) The system according to claim [[16]] 1, wherein the substrate comprises rigid matter further including:

a passivation/release layer located over at least the first transparent/conductive electrode layer and the second transparent/conductive electrode layer.

22. (Currently Amended) The system according to claim [[7]] 1, wherein the semi-transparent sensor further includes:

an anti-reflection coating deposited on an upper surface of the second transparent/conductive electrode layer to prevent a light reflection loss.

23. (Currently Amended) The system according to claim [[7]] 1, wherein the semi-transparent sensor further includes:

an anti-reflection coating deposited on a lower surface of the first transparent/conductive electrode layer to prevent a light reflection loss.

24. (Currently Amended) [[The]] A light producing and monitoring system according to claim 7, wherein the semi-transparent sensor further includes comprising:

a light producing device from which light is emitted with wavelengths that range from approximately 700nm to approximately 3 microns;

a semi-transparent substrate; and

a semi-transparent sensor configured on the semi-transparent substrate including:

a first transparent/conductive layer deposited on the substrate,

an active sensor element deposited on top of the first transparent/conductive layer,

a second transparent/conductive layer deposited on top of the active sensor element,

a first anti-reflection layer deposited on top of the second transparent/conductive layer to prevent a light reflection loss, and

an absorption layer deposited on top of the first anti-reflection

~~an upper surface of the second transparent/conductive electrode layer to prevent visible light from reaching the active sensor element,~~

the semi-transparent sensor being located in front of the light producing device, to allow at least a portion of the emitted light to pass through the semi-transparent sensor and at least a portion of light to be absorbed by the semi-transparent sensor, the semi-transparent sensor being configured to be semi-transparent at the wavelength of the emitted light.

25. (Previously Presented) A light producing and monitoring system comprising:
 - a light producing device from which light is emitted with wavelengths that can range from approximately 700nm to approximately 3 microns;
 - a semi-transparent substrate;
 - a semi-transparent sensor including:
 - a first anti-reflection layer deposited on the substrate,
 - a first transparent/conductive electrode layer deposited on top of the first anti-reflection layer,
 - an active sensor element deposited on top of the first transparent/conductive layer and including semiconductor layers,
 - a second transparent/conductive electrode layer deposited on top of the active sensor,
 - a second anti-reflection layer deposited on top of the second transparent/conductive layer, and
 - an absorption layer deposited on top of the second anti-reflection layer to prevent visible light from reaching the active sensor;
 - the semi-transparent sensor located in front of the light producing device, such that at least a portion of the emitted light passes through the semi-transparent sensor and at least a portion of light is absorbed by the semi-transparent sensor, and wherein the semi-transparent sensor is configured to be semi-transparent at the wavelength of the emitted light.

26. (Previously Presented) The system according to claim 25, wherein the transparency of the sensor is approximately equal to or greater than 90%.

27. (Previously Presented) The system according to claim 26, wherein the transparency of the sensor is equal to about 95%.

28. (Previously Presented) The system according to claim 25, wherein each anti-reflection layer includes silicon.

29. (Previously Presented) The system according to claim 25, wherein a thickness of each anti-reflection layer is selected to approximately match the wavelength emitted by the light producing device.

30. (Previously Presented) The system according to claim 25, wherein at least one of the first and second anti-reflection layers includes a plurality of layers.

31. (Previously Presented) The system according to claim 30, wherein the anti-reflection layers include at least one of:

doped magnesium;

doped cerium; and

doped silicon.

32. (New) The system as set forth in claim 24, further including:

a passivation/release layer located over at least the first transparent/conductive layer and the second transparent/conductive layer.

33. (New) The system as set forth in claim 32, further including:

a second anti-reflection layer deposited about a lower surface of the first transparent/conductive layer to prevent a light reflection loss.